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Coulon

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[54] **LOW PROFILE KEYBOARD KEYSWITCH USING A DOUBLE SCISSOR MOVEMENT**

[75] Inventor: **Kenneth E. Coulon**, Plano, Tex.

[73] Assignee: **Texas Instruments Incorporated**, Dallas, Tex.

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[52] **U.S. Cl.** ..... **200/5 A**; 200/343; 200/344

[58] **Field of Search** ..... 200/5 A, 341–345, 200/517; 361/680

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,580,022	4/1986	Olesch et al.	200/344
5,329,084	7/1994	Watanabe et al.	200/344
5,457,297	10/1995	Chen	200/344
5,466,901	11/1995	Mochizuki	200/344 X
5,504,283	4/1996	Kako et al.	200/5 A
5,512,719	4/1996	Okada et al.	200/344
5,590,020	12/1996	Sellers	200/380
5,597,067	1/1997	Yoneyama	200/344

Primary Examiner—J. R. Scott

Attorney, Agent, or Firm—Bret J. Petersen; James C. Kesterson; Richard L. Donaldson

[57] **ABSTRACT**

A low profile and light weight keyboard for portable electronic devices, such as notebook computers having a dual scissor movement. In one embodiment, the movement comprises an inner **318** and outer member **333**, which connect at four pivot points. The two scissors appear as adjacent portions of the inner and outer members which are connected at a pivot point **308**, and connected to each other with "living hinges." **310** The inner and outer movement members are attached or bonded to the keycap **302** and base **312** with the living hinge **310**.

21 Claims, 4 Drawing Sheets